

**Importation of Longan fruit
with Stems (*Dimocarpus longan*)
from China into the United States**

A Qualitative, Pathway-Initiated Pest Risk Assessment

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A. Introduction

This pest risk assessment was prepared by the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture (USDA) to examine plant pest risks associated with the importation into the United States of fresh longan fruit (*Dimocarpus longan*) with extensive stems from the Peoples Republic of China. This is a qualitative pest risk assessment, that is, estimates of risk are expressed in qualitative terms such as high or low rather than numerical terms such as probabilities or frequencies. The details of methodology and rating criteria can be found in: *Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments, version 4.1* (USDA, 1995); available from the individual named in the proposed regulations, or on the web site: <http://www.aphis.usda.gov/ppq/ss/>.

International plant protection organizations, e.g., North American Plant Protection Organization (NAPPO) and the United Nations Food and Agriculture Organization (FAO), provide guidance for conducting pest risk analyses. The methods used to initiate, conduct, and report this plant pest risk assessment are consistent with guidelines provided by NAPPO and FAO. Our use of biological and phytosanitary terms conforms with the *NAPPO Compendium of Phytosanitary Terms* (Hopper, 1996) and the *Definitions and Abbreviations* (Introduction Section) in *International Standards for Phytosanitary Measures, Section 1—Import Regulations: Guidelines for Pest Risk Analysis* (FAO, 1996).

The *Guidelines for Pest Risk Analysis* provided by FAO (1996) describe three stages in pest risk analysis. This document satisfies the requirements of FAO Stages 1 (initiation) and 2 (risk assessment).

B. Risk Assessment

1. Initiating Event: Proposed Action

This pest risk assessment is commodity-based, and therefore "pathway-initiated"; the assessment is in response to a request for USDA authorization to allow importation of a particular commodity presenting a potential plant pest risk. In this case, the importation of fresh longan fruit with additional length of stems (reported to be from 10 - 15 cm in length and 3 - 4 mm in diameter) as potential pathways for introduction of plant pests. We determine that the extensive length of stem is an additional pathway. Regulatory authority for the importation of fruits and vegetables from foreign sources into the U.S. is found in 7 CFR §319.56. Specific mention of leaves and stems is referred by 7 CFR §319.56-2.

2. Assessment of Weediness Potential Longan, *Dimocarpus longan*.

Table 1: Process for Determining Weediness Potential of Commodity

Commodity: Sapindaceae, *Dimocarpus longan* Lour. (longan)

Synonyms for species: *Euphoria longan* (Lour.) Steud.

Euphoria longana Lam.

Nephelium longan (Lour.) Hook.

Nephelium longana (Lam.) Cambess.

Phase 1: Consider whether the genus is new to or not widely prevalent in the United States (exclude plants grown under USDA permit in approved containment facilities)?

Longan is not reported to occur naturally in the United States.

Phase 2: Answer Yes or No to the following questions:

Are species within the genus reported as weeds in:

NO *Geographical Atlas of World Weeds* (Holm et al., 1979)

NO *World's Worst Weeds* (Holm et al., 1977) or *World Weeds: Natural Histories and Distribution*. (Holm et al, 1997)

NO *Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act* (Gunn and Ritchie, 1982)

NO *Economically Important Foreign Weeds* (Reed, 1977)

NO Weed Science Society of America list (WSSA, 1989)

NO Is there any literature reference indicating weediness (e.g., *AGRICOLA*, *CAB*, *Biological Abstracts*, *AGRIS*; search on "genus name" combined with "weed").

Phase 3: Conclusion:

IF: 1. The genus/species is widely prevalent in the United States and the answer to all of the questions is **no...**

☛ Proceed with the pest risk assessment.

2. The genus/species is widely prevalent in the United States and the answer to **one or more** of the questions is **yes...**

 Proceed with the pest risk assessment, provide comments on findings in text, and incorporate findings regarding weediness into the Risk Elements described below.

3. The genus/species is new to or not widely prevalent in the United States and the answer to all of the questions is **no...**

 Proceed with the pest risk assessment.

4. The genus/species is new to or not widely prevalent in the United States and the answer to **one or more** of the questions is **yes...**

 Consult authority under the Federal Noxious Weed Act for listing plant species as a noxious weed and consider the advisability of performing a pest-initiated pest risk assessment on the plant species. Provide explanations of findings in text.

As there is no weediness potential identified by this process, the pest risk assessment will continue.

3. Previous Risk Assessments, Current Status

1981- Longan fruit from China denied because of *Dacus* and *Cryptophlebia*.

4. Pest List: Pests Associated with *Dimocarpus (Euphoria longan)*.

The pest list in Table 2 was developed after a review of the information sources listed in USDA (1995). The list summarizes information on the distribution of each pest, pest-commodity association, interception records 1985-1998, and regulatory history.

Table 2 - Arthropod Pest List

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
Epitrimerus dimocarpi Kuang & Hong	Eriophyidae	Acari	CN	a		Kuang & Hong, 1989
Eriphyes litchii (Keifer)	Eriophyidae	Acari	CN, HI	n, Ze fruit, stem	yes	China, 1997; Nishida, 1997
Oligonychus biharensis (Hirst)	Tetranychidae	Acari	CN, HI	c		Anon, 1994; Jeppson, et al, 1975; Nishida, 1997
Tetranychus sp.	Tetranychidae	Acari	CN	n		Anon, 1994
Formicomis braminus La Ferte- Senectere	Anthicidae	Coleoptera	CN	a,b,c		Anon, 1965; Armstrong & Drummond, 1986
Anoplophora chinensis Foerster	Cerambycidae	Coleoptera	CN	a		Anon, 1994; Browne, 1968; EPPO datasheet
Anoplophora malasiaca (Thompson)	Cerambycidae	Coleoptera	CN	a		Li-ying, et al, 1997; EPPO datasheet
Aristobia testudo (Voet)	Cerambycidae	Coleoptera	CN	a		China, 1997; Duffy, 1968; Ho, et al, 1990; Luo, et al, 1997; Anon, 1994; Li-ying, et al, 1997
Astathes episcopalalis Chevrolet	Cerambycidae	Coleoptera	CN	a		Anon, 1994
Hypomeces squamosus F.	Curculionidae	Coleoptera	CN	a,n		CAB map No. 498; Ebeling, 1959; Anon 1965; Hill, et al, 1982; Anon, 1994; Clausen, 1931; Browne, 1968
Sympiezomias citri Chao	Curculionidae	Coleoptera	CN	a		Yang, 1984; Anon, 1994
Lyctus brunneus Stephens	Lyctidae	Coleoptera	CN, US, HI	a,c		Anon, 1965; Nishida, 1997; Blackwelder, 1957
Adoretus tenuimaculatus Waterhouse	Scarabaeidae	Coleoptera	CN	a		Shiraki, 1952; Anon, 1994
Anomala exoleta Faldermann	Scarabaeidae	Coleoptera	CN	a		Anon, 1994
Anomala cupripes Hope	Scarabaeidae	Coleoptera	CN	a,n		China, 1997; Anon, 1994

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
<i>Anomala ebenina Fairmaire</i>	Scarabaeidae	Coleoptera	CN	a		Anon, 1994
<i>Anomala expansa Bates</i>	Scarabaeidae	Coleoptera	CN	a,n		Anon, 1994
<i>Dynastes gideon L.</i>	Scarabaeidae	Coleoptera	CN	e, fruit		China, 1997
<i>Exolontha serrulata Gyllenhal</i>	Scarabaeidae	Coleoptera	CN	a		Anon, 1994
<i>Holotrichia ovata Chang</i>	Scarabaeidae	Coleoptera	CN	a		Anon, 1994
<i>Holotrichia sauteri Moser</i>	Scarabaeidae	Coleoptera	CN	a		Anon, 1994; Huang & Lin, 1987
<i>Potosa brevitarsis Lewis</i>	Scarabaeidae	Coleoptera	CN	a		Anon, 1994
<i>Ulomoides dermestoides Chevrolet</i>	Tenebrionidae	Coleoptera	CN	a,n		Anon, 1994; Vandenberg, personal com., 1998
Cecidomyiidae, sp. of	Cecidomyiidae	Diptera	CN	n		PPQ Interception records
<i>Bactrocera dorsalis (Hendel)</i>	Tephritidae	Diptera	CN, HI	n,z _i fruit	yes	Anon, 1994; PPQ Interception records; White & Elson-Harris, 1992
<i>Bactrocera curcurbitae Coquillet</i>	Tephritidae	Diptera	CN, HI	n,z _i fruit	yes*	White & Elson-Harris, 1992; USDA, 1996
<i>Bactrocera</i> sp.	Tephritidae	Diptera	CN	n,z _i fruit		PPQ Interception records
Tephritidae, sp. of	Tephritidae	Diptera	CN	n,z _i fruit		PPQ Interception records
<i>Erthesina fullo (Thunberg)</i>	Pentatomidae	Heteroptera	CN	e, stem		China, 1997; Anon, 1994; Browne, 1968; Clausen, 1931
<i>Eurydema cingulatus (F.)</i>	Pentatomidae	Heteroptera	CN	e, stem		Anon, 1965; Li-ying, et al, 1997; Clausen, 1931; Shiraki, 1952
<i>Plautia crossota (Dallas) =P. fimbriata (F.)</i>	Pentatomidae	Heteroptera	CN	e, nstem		Anon, 1994; Li-ying, et al, 1997
<i>Rhynchoscoris humeralis (Thunberg)</i>	Pentatomidae	Heteroptera	CN	z _e , fruit	yes	China, 1997; Ebeling, 1959; Nath, 1974; Anon, 1965; Yang, 1984; Clausen, 1931; Butani, 1979
<i>Tessaratoma papillosa (Drury)</i>	Pentatomidae	Heteroptera	CN	e, y (vector longan witch's broom virus), fruit, stem		China, 1997; Chen, 1984; Anon, 1994; Li-ying, et al, 1997; Chen, et al, 1992; Falkenstein, 1931; Zhang, 1981
<i>Aleurocanthus spiniferus Quaintance & Baker</i>	Aleyrodidae	Homoptera	CN, HI	a, n		China, 1997; Anon, 1994; Mound & Halsey, 1978; Nishida, 1997
<i>Aleurotuberculatus psidii (Singh)</i>	Aleyrodidae	Homoptera	CN	a, n		Anon, 1994; Mound & Halsey, 1978; Anon, 1965

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
<i>Aphis gossypii</i> Glover	Aphididae	Homoptera	CN, US	a,c		Anon, 1994; Blackman & Eastop, 1985
<i>Cosmoscarta bispecularis</i> White	Cercopidae	Homoptera	CN	a, stem		Anon, 1994; Clausen, 1931; Pawar & Bhalla, 1974; Kashyap & Adlakha, 1971
<i>Empoasca flavescens</i> (F.)	Cicadellidae	Homoptera	CN	n, stem		Anon, 1994; Syoziro et al, 1965; Takagi, 1981; CIE Map No. 326
<i>Idioscopus clypealis</i> (Lethierry)	Cicadellidae	Homoptera	CN	e, stem		Anon, 1994; Li-ying, et al, 1997; Clausen, 1931; Browne, 1968; Anon, 1965
<i>Tartessus ferrugineus</i> (Walker)	Cicadellidae	Homoptera	CN	e, stem		Anon, 1994; Clausen, 1931
<i>Cryptotympana atrata</i> (F.)	Cicadidae	Homoptera	CN	a, stem		Anon, 1994
<i>Huechys sanguinea</i> (DeGeer)	Cicadidae	Homoptera	CN	a, stem		Anon, 1994
<i>Ceroplastes rubens</i> Maskell	Coccidae	Homoptera	CN,FL,HI	z _c , stem	yes	Anon, 1994; Ben-Dov, 1993; Gimple, et al, 1974; Nishida, 1997
<i>Ceroplastes ceriferus</i> (Fabricius)	Coccidae	Homoptera	CN,US	c, stem		China, 1997; Gimple, et al, 1974; Hamon & Williams, 1984
Coccidae, sp. of	Coccidae	Homoptera	CN	n, stem		PPQ Interception records
<i>Coccus acutissimus</i> (Green)	Coccidae	Homoptera	CN,US, HI	c, stem		Anon, 1994; Ben-Dov, 1993; Anon, 1965; Nishida, 1997
<i>Coccus formicarii</i> (Green)	Coccidae	Homoptera	CN	n,z _c , stem	yes	Anon, 1994; Ben-Dov, 1993
<i>Coccus hesperidum</i> (L.)	Coccidae	Homoptera	CN,US	c, stem		Anon, 1994; Ben-Dov, 1993; Anon, 1965
<i>Dicyphococcus castilloae</i> (Green)	Coccidae	Homoptera	CN	z _c , stem	yes	Anon, 1994; Ben-Dov, 1993
<i>Eucalymnatus tessellatus</i> (Signoret)	Coccidae	Homoptera	CN,US, HI	c, stem		Anon, 1994; Ben-Dov, 1993; Anon, 1965; Nishida, 1997
<i>Pulvinaria polygonata</i> Cockerell	Coccidae	Homoptera	CN	a,n		Anon, 1994; Ben-Dov, 1993; Li-ying, et al, 1997; Hanson, 1963
<i>Pulvinaria psidii</i> Maskell	Coccidae	Homoptera	CN,US, HI	c, stem		China, 1997; Ben-Dov, 1993; Nishida, 1997
<i>Saissetia oleae</i> (Bernard)	Coccidae	Homoptera	CN,US, HI	c, stem		Anon, 1994; Ben-Dov, 1993; Anon, 1965; Nishida, 1997
<i>Aulacaspis longanae</i> Chen	Diaspididae	Homoptera	CN	z, stem	yes	Chen, et al, 1980; Anon, 1994

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
Aulacaspis sp.	Diaspididae	Homoptera	CN	n		PPQ Interception records
Fiorinia pinicola Maskell	Diaspididae	Homoptera	CN, GA	g		Anon, 1994; Nakahara, 1982
Fiorinia theae Green	Diaspididae	Homoptera	CN, US	c, stem		Anon, 1994; Nakahara, 1982
Howardia biclavis (Comstock)	Diaspididae	Homoptera	CN, US; HI	c, stem		Anon, 1994; Nakahara, 1982; Nishida, 1997
Lindingaspis ferrisi McKenzie	Diaspididae	Homoptera	CN	n		PPQ Interception records; Anon, 1994
Pseudaonidia trilobitiformis Green	Diaspididae	Homoptera	CN, FL	n		PPQ Interception records
Thysanofiorinia nephelii Maskell	Diaspididae	Homoptera	CN, HI, FL	n, z stem	yes	PPQ Interception records; Tao, 1989; Anon, 1994; Anon, 1965; Nishida, 1997
Unaspis yanonensis (Kuwana)	Diaspididae	Homoptera	CN	n		Anon, 1994
Geisha distinctissima Walker	Flatidae	Homoptera	CN	e, stem		Clausen, 1931; Tawian, 1956; Syoziro et al, 1965; Clausen, 1927; Anon, 1994
Lawana imitata Melichar	Flatidae	Homoptera	CN	e, stem		China, 1997; Anon, 1994
Salurnis marginellus Guerin Meneville	Flatidae	Homoptera	CN	e, stem		Anon, 1994; China, 1997; Browne, 1968
Pyrops lathburii (Kirby)	Fulgoridae	Homoptera	CN	e, stem		Anon, 1994; Metcalf, 1947; Mckamey, personal com., 1998
Pyrops spinolae Westwood	Fulgoridae	Homoptera	CN	e, stem		Anon, 1994; Metcalf, 1947; Mckamey, personal com., 1998
Pyrops candelaria (L.)	Fulgoridae	Homoptera	CN	e, stem		China, 1997; Anon, 1994; Li-yang, et al, 1997; Mckamey, personal com., 1998; Metcalf, 1947
Icerya purchasi Maskell	Margarodidae	Homoptera	CN, US, HI	c, stem		Anon, 1965; Nishida, 1997
Icerya seychellarum Westwood	Margarodidae	Homoptera	CN	fruit, stem, n, z	yes	China, 1997; Anon, 1994; Clausen, 1931; Browne, 1968; USDA, 1982a
Dysmicoccus neobrevipes Cockerell	Pseudococcidae	Homoptera	CN, HI	n		PPQ Interception records; Ben-Dov, 1994; Nishida, 1997

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
<i>Nipaecoccus viridis</i> (Newstead)	Pseudococcidae	Homoptera	CN,HI	n,z,stem, fruit	yes	China, 1997; Anon, 1994; Ghosh & Ghosh, 1985; Bar-Zakay, et al, 1987; Nechols & Seibert, 1985: CIE Map No. 446; Sharaf & Meyerdirk, 1987; Nishida, 1997
<i>Planococcus citri</i> (Risso)	Pseudococcidae	Homoptera	CN,US,HI	c		Anon, 1994; Nishida, 1997
<i>Planococcus lilacinus</i> (Cockerell)	Pseudococcidae	Homoptera	CN	n,z, stem, fruit	yes	PPQ Interception records; Anon, 1994; Li-ying, et al, 1997
<i>Planococcus</i> sp.	Pseudococcidae	Homoptera	CN	n		PPQ Interception records
Pseudococcidae, sp. of	Pseudococcidae	Homoptera	CN	n		PPQ Interception records
<i>Cornegenapsylla sinica</i> Yang & Li	Psyllidae	Homoptera	CN	a,y (vector longan witch's broom)		China, 1997; Hodkinson, 1986; Anon, 1994; Chen, et al, 1992
<i>Tenaphalara dimocarpi</i> Yang & Li	Psyllidae	Homoptera	CN	a		Anon, 1994
<i>Kerria lacca</i> (Kerr)	Tachardiidae	Homoptera	CN	z,e,stem,	yes	Anon, 1994; Chiu, et al, 1981; Li-ying, et al, 1997; Varshney & Teotia, 1968
<i>Kerria greeni</i> (Chamberlin)	Tachardiidae	Homoptera	CN	z,e, stem	yes	Anon, 1994; Li-ying, et al, 1997; Varshney & Teotia, 1968
<i>Cryptotermes declivis</i> Tsai & Chen	Kalotermitidae	Isoptera	CN	a		Anon, 1994
<i>Coptotermes formosanus</i> Shiraki	Rhinotermitidae	Isoptera	CN,US,HI	a,c		Anon, 1994; Li-ying, et al, 1997; Nishida, 1997; Krishna & Weesner, 1970
<i>Macrotermes barneyi</i> Light	Termitidae	Isoptera	CN	a		Anon, 1994; Krishna & Weesner, 1970
<i>Odontotermes formosanus</i> Shiraki	Termitidae	Isoptera	CN	a		Anon, 1994; Anon, 1965; Krishna & Weesner, 1970
<i>Dyspessa monticola</i> Groum-Grshima	Cossidae	Lepidoptera	CN	a		Anon, 1994
<i>Zeuzera coffeae</i> Nietner	Cossidae	Lepidoptera	CN	a		Anon, 1965; Tang, et al, 1980, CIE map No. 313; Anon, 1994; Butani, 1979; Zhang, 1994; Anon, 1965; Browne, 1968

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
Gelechiidae, sp. of	Gelechiidae	Lepidoptera	CN	n		PPQ Interception records
Anisozyga sp.	Geometridae	Lepidoptera	CN	a		China, 1997; Zhang, 1994
Ascotis selenaria (Denis & Schiffermuller)	Geometridae	Lepidoptera	CN	e		China, 1997, Shiraki, 1952; Li-ying, et al, 1997; Zhang, 1994
Sauris interruptaria Moore	Geometridae	Lepidoptera	CN	a		China, 1997
Thalassodes proquadraaria Inouce	Geometridae	Lepidoptera	CN	a		China, 1997
Gracillariidae, sp. of	Gracillariidae	Lepidoptera	CN	n		PPQ Interception records
Conopomorpha litchiella Bradley	Gracillariidae	Lepidoptera	CN	z stem	yes	China, 1997; Huang & Hung, 1996; Anon, 1994; Li-ying, et al, 1997; Zhang, 1994
Conopomorpha sinensis Bradley	Gracillariidae	Lepidoptera	CN	z, fruit, stem	yes	China, 1997; Huang & Hung, 1996; Anon, 1994; Li-ying, et al, 1997; Zhang, 1994
Setora sinensis Moore = S. postornata (Hampson)	Limacodidae	Lepidoptera	CN	a		China, 1997; Anon, 1994; Zhang, 1994
Deudorix epijarbas Moore	Lycaenidae	Lepidoptera	CN	z, fruit	yes	China, 1997; Anon, 1994; Li-ying, et al, 1997; Butani, 1979; Zhang, 1994; Anon, 1965; Djou, 1938; Fullaway, 1927; Verma, 1985; Liu, 1964
Euproctis taiwana (Shiraki)	Lymantriidae	Lepidoptera	CN	a		Li-ying, et al, 1997; Li, et al, 1981; Zhang, 1994
Lymantria xyloina Swinhoe	Lymantriidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994; Chang & Weng, 1986
Orygia postica (Walker)	Lymantriidae	Lepidoptera	CN	a		Li-ying, et al, 1997; Zhang, 1994; Anon, 1965
Indarbela dea Swinhoe	Metarbelidae	Lepidoptera	CN	a		Anon, 1994; Li-ying, et al, 1997; Butani, 1979; Zhang, 1994; Butani, 1977; Chien, 1964
Indarbela tetraonis Moore	Metarbelidae	Lepidoptera	CN	a		Anon, 1994, Browne, 1968; Butani, 1979; Zhang, 1994; Singh, 1993; Butani, 1977
Squamura discipuncta (Wileman)	Metarbelidae	Lepidoptera	CN	a		Li-ying, et al, 1997; Zhang, 1994; Chien, 1964

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
<i>Eudocima hypermnestra</i> Stoll	Noctuidae	Lepidoptera	CN	e		Anon, 1994; Poole, 1989; Zhang, 1994
<i>Spodoptera litura</i> (F.)	Noctuidae	Lepidoptera	CN	a,n		Zhang, 1994; USDA, 1982b; Anon, 1965; Clausen, 1931; Anon, 1994; Anon, 1965
<i>Stauropus alternus</i> Walker	Notodontidae	Lepidoptera	CN	a		Zhang, 1994; Anon, 1965; China, 1997; Li-ying, et al, 1997; Browne, 1968; Anon, 1965
<i>Stauropus persimilis</i> Butler	Notodontidae	Lepidoptera	CN	a		Anon, 1994
<i>Acanthoecia laminati</i> Heylaerts	Psychidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994
<i>Clania (Eumeta) japonica</i> Heylaerts	Psychidae	Lepidoptera	CN	a		Li-ying, et al, 1997; Zhang, 1994
<i>Clania (Eumeta) minuscula</i> Butler	Psychidae	Lepidoptera	CN	a		Anon, 1994; Shiraki, 1952; Zhang, 1994
<i>Clania (Eumeta) variegata</i> Snellen	Psychidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994; Anon, 1965
<i>Dappula tertia</i> Templeton	Psychidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994
<i>Mahasena oolona</i> Sonan	Psychidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994
<i>Conogethes</i> sp.	Pyralidae	Lepidoptera	CN	n		PPQ Interception records
<i>Conogethes punctiferalis</i> Guenée	Pyralidae	Lepidoptera	CN	n		Anon, 1994; Anon, 1965; USDA, 1957
<i>Phycitinae</i> , sp. of	Pyralidae	Lepidoptera	CN	n		PPQ Interception records
<i>Pyraustinae</i> , sp. of	Pyralidae	Lepidoptera	CN	n		PPQ Interception records
<i>Adoxophyes fasciculana</i> (Walker) = <i>A. cytosema</i> Meyrick	Tortricidae	Lepidoptera	CN	a		Zhang, 1994; Liu, 1958; Anon, 1994; Brown, personal com, 1998; Liu, 1964
<i>Adoxyphyes orana</i> Fischer von Rasletstamm	Tortricidae	Lepidoptera	CN	a,n		Anon, 1994
<i>Archips asiaticus</i> Walsingham	Tortricidae	Lepidoptera	CN	a		Anon, 1977; Brown, 1997, personal com.; Zhang, 1994; Chen, et al, 1934; Anon, 1994
<i>Cerace stipatana</i> Walker	Tortricidae	Lepidoptera	CN	a		Anon, 1994; Han & Shen, 1993; Brown, personal com, 1998
<i>Cnesteboea celligera</i> (Meyrick)	Tortricidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994; Brown, personal com, 1998; Liu, 1964

Organism	Family	Order	Distrib	Comments	Quarantine pest Follow pathway	References
Cryptophlebia ombrodelta Lower	Tortricidae	Lepidoptera	CN,HI	n,z _i fruit	yes	Anon, 1994; USDA, 1996; Nishida, 1997
Dudua aprobola (Meyrick)	Tortricidae	Lepidoptera	CN	a		Anon, 1994; Brown, personal com, 1998; Zhang, 1994; Maiti & Sahoo, 1991; Singh, 1993; Liu, 1964
Homona tabescens (Meyrick)	Tortricidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994; Brown, personal com, 1998; Liu, 1964
Homona coffearia Nietner	Tortricidae	Lepidoptera	CN	z _i , fruit	yes	China, 1997; Anon, 1994; Li-ying, 1997; Zhang, 1994; Anon, 1965; Liu, 1964. Xiu-Qiong, 1964; Van der Geest & Evenhuis, 1991; Hill, 1983
Homona sp.	Tortricidae	Lepidoptera	CN	a		Anon, 1994
Olethreutinae, sp. of	Tortricidae	Lepidoptera	CN	n		PPQ Interception records
Statherotis leucaspis Meyrick	Tortricidae	Lepidoptera	CN	a		Anon, 1994; Zhang, 1994; Singh, 1993; Liu, 1964
Brachytrupes portentosus (Lichenstein)	Gryllidae	Orthoptera	CN	a,n		Li-ying, et al, 1997; Browne, 1968
Holochlora japonica (Brunner von Wattenwyl)	Tettigoniidae	Orthoptera	CN,HI	a,n		Anon, 1994; Nishida, 1997
Phlaeothripidae, sp. of	Phlaeothripidae	Thysanoptera	CN	n		PPQ Interception records
Scirtothrips dorsalis Hood	Thripidae	Thysanoptera	CN,HI	a,n		China, 1997; Weiqiu & Xialoli, 1993; Nishida, 1997
Selenothrips rubrocinctus (Giard)	Thripidae	Thysanoptera	CN,US,HI	a,c		Anon, 1994; Weiqiu & Xialoli, 1993; Nishida, 1997
Stenchaetothrips fusca (Moulton)	Thripidae	Thysanoptera	CN	a		Anon, 1994; Weiqiu & Xialoli, 1993
Thripidae, sp. of	Thripidae	Thysanoptera	CN	n		PPQ Interception records

Table 3: Pathogens and Nematodes pest list

Pest	Origin	Comment	Quarantine pest follow pathway	References
Fungi				
<i>Ascochyta longan</i> C.F. Zhang & P.K. Chi (Fungi imperfecti, Coelomycetes)	CN	a		China, 1997; Zhang and Qi, 1999
<i>Ascochyta</i> sp. (Deuteromycotina, Coelomycetes)	CN	a		China, 1997
<i>Aspergillus</i> spp. (Fungi imperfecti, Hyphomycete)	CN	c		China, 1997

Pest	Origin	Comment	Quarantine pest follow pathway	References
<i>Asterina heliciae</i> Yamam. (Ascomycetes, Dothideales)	CN	a, c		China, 1997
<i>Cephaleuros virescens</i> Kunze (Algae)	CN,US	c		China, 1997; CPC 1997
<i>Chaetothyrium echinulatum</i> Yamam(Ascomycetes, Dothideales)	CN	a		China, 1997
<i>Chaetothyrium sawadai</i> Yamam. (Ascomycetes, Dothideales)	CN	a		China, 1997
<i>Colletotrichum gloeosporioides</i> Penz.(Fungi imperfecti, Coelomycetes)	CN,US	c		China, 1997; Farr <i>et al.</i> 1989
<i>Colletotrichum</i> sp (Fungi imperfecti, Coelomycetes)	CN	z fruit, stem		China, 1997
<i>Coniothyrium litchii</i> P.K. Chi & Z.D. Jiang (Fungi imperfecti, Coelomycetes)	CN	z fruit	yes	China, 1997
<i>Corethropsis</i> sp.(Fungi imperfecti)	CN	a		China, 1997
<i>Fusarium solani</i> (Mart.)(Fungi imperfecti, Hyphomycete)	CN, US	c		China, 1997; Farr <i>et al.</i> 1989
<i>Glomerella cingulata</i> (Stonem.) Spauld. & Schr. (Ascomycetes, Phylochorales)	CN US	c		China, 1997; Farr <i>et al.</i> 1989
<i>Hexagonia apiaria</i> (Pers.) Fr.(Basidiomycetes, Aphyllophorales)	CN	z, stem	yes	China, 1997
<i>Hexagonia heteropora</i> (Montogne) Lmazaki (Basidiomycetes, Aphyllophorales)	CN	z stem	yes	China, 1997
<i>Leptosphaeria guayuan</i> C.F. Zhang & P.K. Chi (Ascomycetes, Xylariales)	CN	z fruit, stem	yes	China, 1997; Zhang and Qi 1996
<i>Leptosphaeria longan</i> C.F. Zhang & P.K. Chi (Ascomycetes, Xylariales)	CN	z, fruit, stem	yes	China, 1997; Zhang and Qi 1996
<i>Marssonnia euphoriae</i> C.F. Zhang & P.K. Chi (Fungi imperfecti, Coelomycetes)	CN	z fruit, stem	yes	China, 1997; Zhang and Qi 1996
<i>Meliola camelliae</i> (Catt.) Sacc. (Pyrenomycetes, Meliolales)	CN, US	a, c		China, 1997; Farr <i>et al.</i> 1989
<i>Meliola capensis</i> (K.&C.) Theiss. var. <i>diploglottidis</i> Hansf.(Ascomycetes, pyrenomycetes)	CN	a, c		China, 1997; Farr <i>et al.</i> 1989
<i>Meliola nepheliicola</i> Stev. et Rold. (Pyrenomycetes, Meliolales)	CN	a, c		China, 1997
<i>Neocapnodium tanakae</i> (Shirai et Hara) Yamam. (Ascomycetes)	CN	z fruit, stem	yes	China, 1997
<i>Oospora</i> sp.(Deuteromycotina, Hyphomycetes)	CN	z, fruit		China, 1997
<i>Penicillium</i> spp. (Fungi imperfecti, Coelomycetes)	CN	c		China, 1997
<i>Pestalotia funerea</i> Desm (Fungi imperfecti, Coelomycetes)	CN	a		China, 1997
<i>Pestalotia pauciseta</i> Sacc. (Fungi imperfecti, Coelomycetes)	CN	a		China, 1997
<i>Pestalotiopsis pauciseta</i> (Sacc.) Y.X. Chen (Fungi imperfecti, Coelomycetes)	CN	z, stem	yes	China, 1997; Zhang and Qi 1996
<i>Phaeosaccardinula javanica</i> (Zimm.) Yamam. (Ascomycetes, Dothideales)	CN.	z		China, 1997
<i>Phellinus williamsii</i> (Murr.) Pat. (Basidiomycetes, Hymenochaetales)	CN	z, stem	yes	China, 1997
<i>Phlyctaena</i> sp.(Deuteromycotina)	CN	c, a		China, 1997
<i>Phomopsis guiyuan</i> C.F. Zhang & P.K. Chi (Fungi imperfecti, Coelomycetes)	CN	z, fruit, stem	yes	China, 1997; Zhang and Qi 1996
<i>Phomopsis longanae</i> P.K. Chi & Z.D. Jiang (Fungi imperfecti, Coelomycetes)	CN	z, fruit, stem	yes	China, 1997
<i>Phyllosticta</i> sp.(Fungi imperfecti, Coelomycetes)	CN	a,n		China, 1997
<i>Pseudoperonospora</i> sp.(Oomycetes, Peronosporales)	CN	fruit, z		China, 1997
<i>Trametes</i> sp.(Basidiomycetes, Aphyllophorales)	CN	z, stem		China, 1997

Pest	Origin	Comment	Quarantine pest follow pathway	References
<i>Triposporiopsis spinigera</i> (Hoehn) Yamam. (Ascomycotina)	CN	z fruit, stem	yes	China, 1997
<i>Uredo euphoriae</i> Pat. (Basidiomycetes, Uredinales)	CN	a		China, 1997
Virus				
<i>Euphoria longana</i> witches broom virus (virus)	CN	z, stem		China, 1997; Ye, X. D. et al 1990
Nematodes				
<i>Aphelenchoides fragariae</i> Christie (Nematodiasis)	CN, US	a,g		China, 1997; SON 1984
<i>Criconemoides annulatum</i> Taylor (Nematodiasis)	CN, US	a		China, 1997; SON 1984
<i>Criconemoides macrodorum</i> Taylor (Nematodiasis)	CN	a		China, 1997
<i>Helicotylenchus multicinctus</i> Golden (Nematodiasis)	CN, US	a,g		China, 1997; SON 1984
<i>Tylenchulus semipenetrans</i> Cobb (Nematodiasis)	CN, US	a		China, 1997; SON 1984

Table 4: Noxious Weeds

Weed	Distribution	Comments	References
<i>Cuscuta chinensis</i> lam	CN	n	China, 1997
<i>Cuscuta japonica</i> Choisy	CN	n	China, 1997
<i>Loranthus chinensis</i> DC	CN	n	China, 1997
<i>Loranthus parasiticus</i> (Linn.) Merr.	CN	n	China, 1997
<i>Loranthus yadoriki</i> S. et. Z.	CN	n	China, 1997
<i>Viscum orientale</i> Willd.	CN	n	China, 1997

CN= China, US= United States, HI= Hawaii, FL= Florida, GA=Georgia

Codes used in comments:

- a Pest mainly associated with plant part other than commodity
- b Not likely to be a primary plant pest
- c Listed in non-reportable dictionary as non-actionable
- e Although pest attacks commodity, it would not be expected to remain with the commodity (plant part) during processing.
- g Quarantine pest; pest has limited distribution in the U.S. and is under official control as follows: pest listed by name in USDA's pest dictionary; official quarantine action may be taken on this pest when intercepted on this commodity.
- n Listed in the USDA catalog of intercepted pests as actionable
- y Pest is a vector of *plant* pathogens
- z Pest is reported to attack or infest the commodity.
- ze External feeder: Pest is known to attack or infect commodity and it would be reasonable to expect the pest *may* remain with the commodity during processing and shipping.
- zi Internal feeder: Pest is known to attack or infect commodity and it would be reasonable to expect the pest *may* remain with the commodity during processing and shipping
- * A single confirmed record from Hawaii in 1949. No records since.
- fruit or
- stem Part of commodity pest associated at fruit maturity.

5. List of Quarantine Pests

The list of quarantine pests for commercial shipments of longan fruit and stem from China is provided in Table 3. Should any of these pests be intercepted on commercial (or any other) shipments of longan fruit and stem then quarantine action may be taken.

<i>Acanthoecia laminati</i>	<i>Holotrichia ovata</i>
<i>Adoretus tenuimaculatus</i>	<i>Holotrichia sauteri</i>
<i>Adoxophyes fasciculana</i>	<i>Homona coffearia</i>
<i>Adoxyphyes orana</i>	<i>Homona tabescens</i>
<i>Aleurocanthus spiniferus</i>	<i>Hueches sanguinea</i>
<i>Aleurotuberculatus psidii</i>	<i>Hypomeces squamosus</i>
<i>Anomala cupripes</i>	<i>Icerya seychellarum</i>
<i>Anomala ebenina</i>	<i>Idioscopus clypealis</i>
<i>Anomala exoleta</i>	<i>Indarbela dea</i>
<i>Anomala expansa</i>	<i>Indarbela tetraonis</i>
<i>Anoplophora chinensis</i>	<i>Kerria greeni</i>
<i>Anoplophora malasiaca</i>	<i>Kerria lacca</i>
<i>Aphelenchoides fragariae</i>	<i>Lawana imitata</i>
<i>Archips asaticus</i>	<i>Leptosphaeria guayuan</i>
<i>Aristobia testudo</i>	<i>Leptosphaeria longan</i>
<i>Ascochyta longan</i>	<i>Lindingaspis ferrisi</i>
<i>Ascotis senenaria</i>	<i>Loranthus chinensis</i>
<i>Asterina heliciae</i>	<i>Loranthus parasiticus</i>
<i>Asthathes episcopalalis</i>	<i>Loranthus yadoriki</i>
<i>Aulacaspis longanae</i>	<i>Lymantria xyliana</i>
<i>Bactrocera cucurbitae</i>	<i>Macroternes barneyi</i>
<i>Bactrocera dorsalis</i>	<i>Mahasena oolona</i>
<i>Brachytrupes portentosus</i>	<i>Marssonia euphoriae</i>
<i>Cerace stipatana</i>	<i>Neocapnodium tanakae</i>
<i>Ceroplastes rubens</i>	<i>Nipaecoccus viridis</i>
<i>Chaetothyrium echinulatum</i>	<i>Odontotermes formosanus</i>
<i>Chaetothyrium sawadai</i>	<i>Orygia postica</i>
<i>Clania japonica</i>	<i>Pestalotia funerea</i>
<i>Clania minuscula</i>	<i>Pestalotia pauciseta</i>
<i>Clania variegata</i>	<i>Pestalotiopsis pauciseta</i>
<i>Cnesteboda celligera</i>	<i>Phaeosaccardinula javanica</i>
<i>Coccus formicarii</i>	<i>Phellinus williamsii</i>
<i>Colletotrichum sp.</i>	<i>Phomopsis guiyuan</i>
<i>Coniothyrium litchii</i>	<i>Phomopsis longanae</i>
<i>Conogethes punctiferalis</i>	<i>Planococcus lilacinus</i>
<i>Conopomorpha litchiella</i>	<i>Plautia crossota</i>
<i>Conopomorpha sinensis</i>	<i>Potosa brevitarsis</i>
<i>Cornegenapsylla sinica</i>	<i>Pseudaonidia trilobitiformis</i>
<i>Cosmoscarta bispecularis</i>	<i>Pulvinaria polygonata</i>
<i>Criconemooides macrodorum</i>	<i>Pyrops candelaria</i>
<i>Cryotitermes declivus</i>	<i>Pyrops lathburii</i>
<i>Cryptophlebia ombrodelta</i>	<i>Pyrops spinolae</i>
<i>Cryptotympana atrata</i>	<i>Rhynchocoris humeralis</i>
<i>Cuscuta chinesis</i>	<i>Salurnis marginellus</i>
<i>Cuscuta japonica</i>	<i>Sauris interruptaria</i>
<i>Dappula tertia</i>	<i>Scirtothrips dorsalis</i>

Deudorix epijarbas	Setora sinensis
Dicyphococcus castilloae	Spodoptera litura
Dudua oproblola	Squamura discipuncta
Dynastes gideon	Statherotis leucaspis
Dysmicoccus neobrevipes	Stauropus alternus
Dyspessa monticola	Stauropus persimilis
Empoasca flavescentia	Stenchaethrips fusca
Epimerus dimocarpi	Sympiezomias citri
Eriphyes litchii	Tartessus ferrugineus
Erthesina fullo	Tenaphalara dimocarpi
Eudocima hypermnestra	Tesseratoma papillosa
Euphorbia longana witches broom virus	Thalassodes proquadraria
Euproctis taiwana	Thysanofiorinia nephelii
Eurydema cingulatus	Triposporopsis spinigera
Exolontha serrulata	Ulomoides dermestoides
Fiorinia pinicola	Unaspis yanonensis
Geisha distinctissima	Uredo euphoriae
Hexagonia aparia	Viscum orientale
Hexagonia heteropora	Zeuzera coffeae
Holochlora japonica	

6. Quarantine Pests Likely to Follow Pathway

Only those quarantine pests that have potential to follow the pathway, *i. e.*, be included in commercial shipments of *Dimocarpus longan*, fruit with extended stems, were analyzed in detail (USDA, 1995). Only quarantine pests listed in Table 4 were selected for further analysis and subjected to steps 7-9 below.

Aulacaspis longanae	Icerya seychellarum
Bactrocera cucurbitae	Leptosphaeria guayuan
Bactrocera dorsalis	Leptosphaeria longan
Ceroplastes rubens	Marssonia euphoriae
Coccus formicarii	Neocapnodium tanakae
Coniothyrium litchii	Nipaecoccus viridis
Conopomorpha lichiella	Pestalotiopsis pauciseta
Conopomorpha sinensis	Phaeosaccardinula javanica
Cryptophlebia ombrodelta	Phellinus williamsii
Deudorix epijarbas	Phomopsis guiyuan
Dicyphococcus castilloae	Phomopsis longanae
Eriphyes litchii	Planococcus lilacinus
Euphorbia longana witches broom virus	Rhynchocoris humeralis
Hexagonia aparia	Thysanofiorinia nephelii
Hexagonia heteropora	Triposporopsis spinigera
Homona coffearea	

Other plant pests in this Assessment, not chosen for further scrutiny, may be potentially detrimental to the agricultural production systems of the United States, e.g. the Psychidae complex (bag worms), primarily associated with the foliage, as listed in this PRA. However, there were a variety of reasons for not subjecting them to further analysis. For example, they are associated mainly with plant parts (such as leaves), other than the commodity; they may be associated with the commodity (but would not be reasonably expected to remain with the commodity during processing); they may be more reasonably associated with larger diameter stems or branches, e.g. Cerambycidae, Metarbelidae, Cossidae listed in this PRA, than likely

with the 3-4 mm diameter stems associated with the Longan fruit, they may be more associated with new stem and leaf growth (Pentatomidae, Cicadellidae, Fulgoridae, etc.) rather than with mature fruit-bearing peduncles at harvest time; they have been intercepted as biological contaminants of these commodities during inspections by Plant Protection and Quarantine Officers but would not be expected to be present with every shipment. In addition, the biological hazard of organisms identified only to the generic level are not assessed separately due to the lack of adequate biological/taxonomic information. This lack of biological information on any given insect or pathogen should not be equated with low risk. By necessity, pest risk assessments focus on those organisms for which biological information is available. By developing detailed assessments for known pests that inhabit a variety of niches on the parent species, *i.e.* on the surface of or within the bark/wood, on the foliage, etc., effective mitigation measures can be developed to eliminate the known organism and any similar unknown ones that inhabit the same niches. This assessment is unique in that China has asked to export longan fruit with extended stems (10 -15 cm x 3-4 mm) attached. Normally, fruit, as a risk pathway, is analyzed with only the actual fruit and minor pedicel or calyx associations taken into consideration in the risk process. We consider the extended stem a more durable host than the fruit. Longan fruit with extended stems, in our opinion, add a dimension of risk not previously documented in other than general terms specified in CFR 319.56(2).

7. Economic Importance: Consequences of Introduction

The consequences of introduction were considered for each quarantine pest selected for further analysis. For qualitative, pathway-initiated pest risk assessments, these risks are estimated by rating each pest with respect to five risk elements (USDA, 1995). Table 5 shows the risk ratings for these risk elements.

Table 5: Risk Rating: Consequences of Introduction

Pest	Climate/ Host	Host Range	Dispersal	Economic	Environmental	Risk Rating
<i>Aulacaspis longanae</i>	low	low	low	low	low	low
<i>Bactrocera cucurbitae</i>	high	high	high	high	high	high
<i>Bactrocera dorsalis</i>	high	high	high	high	high	high
<i>Ceroplastes rubens</i>	medium	high	low	high	high	high
<i>Coccus formicarii</i>	low	high	low	medium	high	medium
<i>Conopomorpha sinensis</i> & <i>C. litchiella</i>	low	low	medium	medium	medium	medium
<i>Cryptophlebia pombrodelta</i>	medium	high	medium	medium	medium	medium
<i>Deudorix epijarbas</i>	medium	medium	medium	medium	medium	medium
<i>Dicyphococcus castilloae</i>	low	high	low	low	high	medium
<i>Eriphyes litchii</i>	medium	medium	low	medium	medium	medium
<i>Icerya seychellarum</i>	medium	high	medium	high	high	high
<i>Kerria lacca</i> & <i>K. greeni</i>	low	high	low	low	high	medium
<i>Homona coffearia</i>	medium	high	medium	medium	high	high
<i>Nipaecoccus viridis</i>	medium	high	medium	high	high	high
<i>Planococcus lilacinus</i>	medium	high	medium	low	high	medium
<i>Rhynchoscoris humeralis</i>	medium	high	medium	high	medium	high

Pest	Climate/ Host	Host Range	Dispersal	Economic	Environmental	Risk Rating
<i>Thysanofiorinia nephelii</i>	low	low	low	low	low	low
<i>Coniothyrium litchii</i>	low	low	medium	low	low	low
<i>Euphoria longana witches broom virus</i>	low	low	low	low	low	low
<i>Hexagonia heteropora</i>	low	low	medium	low	low	low
<i>Hexagonia apiaria</i>	low	low	medium	low	low	low
<i>Leptosphaeria longan</i>	low	low	medium	low	low	low
<i>Leptosphaeria guayuan</i>	low	low	medium	low	low	low
<i>Marssonnia euphoriae</i>	low	low	medium	low	low	low
<i>Neocapnodium tanakae</i>	low	low	medium	low	low	low
<i>Pestalotiopsis pauciseta</i>	low	low	medium	low	low	low
<i>Phaeosaccardinula javanica</i>	low	low	medium	low	low	low
<i>Phellinus williamsii</i>	low	low	medium	low	low	low
<i>Phomopsis guiyuan</i>	low	low	medium	low	low	low
<i>Phomopsis longanae</i>	low	low	medium	low	low	low
<i>Triposporiopsis spinigera</i>	low	low	medium	low	low	low

1. This pest previously rated by Hawaiian longan PRA, June, 1996 (USDA, 1986).

8. Likelihood of Introduction

Each pest is rated with respect to introduction potential, *i.e.*, entry and establishment. Two separate components are considered. First, the amount of commodity likely to be imported is estimated. More imports lead to greater risk; therefore, the risk rating for the quantity of commodity is the same for all quarantine pests considered. Second, five biological features, (risk elements) concerning the pest and its interactions with the commodity are considered. The resulting risk ratings are specific to each pest. The cumulative risk rating for introduction was considered to be an indicator of the likelihood that a particular pest would be introduced (USDA, 1995). Table 6 shows our ratings for these risk elements.

Table 6: Risk Rating: Likelihood of Introduction

Pest	Quantity of commodity imported annually	Likelihood survive postharvest treatment	Likelihood survive shipment	Likelihood not detected at port of entry	Likelihood moved to suitable habitat	Likelihood find suitable host	Risk rating
<i>Aulacaspis longanae</i>	medium	high	high	low	low	low	medium
<i>Bactrocera cucurbitae,</i>	medium	high	high	high	high	high	high
<i>Bactrocera dorsalis,</i>	medium	high	high	high	high	high	high
<i>Ceroplastes rubens</i>	medium	high	high	low	medium	high	high
<i>Coccus formicarii</i>	medium	high	high	low	low	medium	medium
<i>Conopomorpha sinensis & C. litchiella</i>	medium	high	medium	medium	medium	low	medium
<i>Cryptophlebia ombrodelta,</i>	medium	medium	medium	medium	medium	low	medium

Pest	Quantity of commodity imported annually	Likelihood survive postharvest treatment	Likelihood survive shipment	Likelihood not detected at port of entry	Likelihood moved to suitable habitat	Likelihood find suitable host	Risk rating
<i>Deudorix epijarbas</i>	medium	medium	medium	medium	medium	medium	medium
<i>Dicyphococcus castilloae</i>	medium	high	high	low	low	high	medium
<i>Eriphyes litchii</i>	medium	medium	medium	high	low	low	medium
<i>Homona coffearia</i>	medium	medium	medium	medium	medium	high	medium
<i>Kerria lacca & K. greeni</i>	medium	high	high	low	low	high	
<i>Icerya seychellarum</i>	medium	high	high	low	medium	high	high
<i>Nipaecoccus viridis</i>	medium	medium	medium	medium	medium	high	medium
<i>Planococcus lilacinus</i>	medium	medium	medium	medium	medium	medium	medium
<i>Rhynchocoris humeralis</i>	medium	medium	medium	medium	medium	medium	medium
<i>Thysanofiorinia nephelii</i>	medium	high	high	low	low	low	medium
<i>Coniothyrium litchii</i>	medium	high	high	low	low	low	medium
<i>Euphoria longana witches broom virus</i>	medium	high	high	high	low	low	medium
<i>Hexagonia heteropora</i>	medium	high	high	low	low	low	medium
<i>Hexagonia aparia</i>	medium	high	high	low	low	low	medium
<i>Leptosphaeria longan</i>	medium	high	high	low	low	low	medium
<i>Leptosphaeria guayuan</i>	medium	high	high	low	low	low	medium
<i>Marssonia euphoriae</i>	medium	high	high	low	low	low	medium
<i>Neocapnodium tanakae</i>	medium	high	high	low	low	low	medium
<i>Pestalotiopsis pauciseta</i>	medium	high	high	low	low	low	medium
<i>Phaeosaccardinula-javanica</i>	medium	high	high	low	low	low	medium
<i>Phellinus williamsii</i>	medium	high	high	low	low	low	medium
<i>Phomopsis guiyuan</i>	medium	high	high	low	low	low	medium
<i>Phomopsis longanae</i>	medium	high	high	low	low	low	medium

1. This pest previously rated by Hawaiian longan PRA, June, 1996 (USDA, 1986).

9. Conclusion: Pest Risk Potential and Phytosanitary Measures

The measure of pest risk potential combines the risk ratings for consequences and likelihood of introduction (USDA, 1995). The estimated pest risk potential for each quarantine pest selected for further analysis for the importation of Longan fruit with 10 - 15 cm stems is provided in Table 7.

Table 7: Pest Risk Potential, Quarantine Pests

Pest	Pest risk potential (consequence of introduction + likelihood of introduction)
<i>Aulacaspis longanae</i>	medium

<i>Bactrocera cucurbitae</i>	high
<i>Bactrocera dorsalis</i>	high
<i>Ceroplastes rubens</i>	high
<i>Coccus formicarii</i>	medium
<i>Conopomorpha sinensis & C. litchella</i>	medium
<i>Cryptophlebia ombrodelta</i>	medium
<i>Deudorix epijarbas</i>	medium
<i>Dicyphococcus castilloae</i>	medium
<i>Eriphyes litchii</i>	medium
<i>Icerya seychellarum</i>	high
<i>Homona coffearia</i>	high
<i>Kerria lacca & K. greeni</i>	medium
<i>Nipaecoccus viridis</i>	high
<i>Planococcus lilacinus</i>	medium
<i>Rhynchoscoris humeralis</i>	high
<i>Thysanofiorinia nephelia</i>	medium
<i>Coniothyrium litchii</i>	medium
<i>Euphoria longana witches broom virus</i>	medium
<i>Hexagonia heteropora</i>	medium
<i>Hexagonia apiaria</i>	medium
<i>Leptosphaeria longan</i>	medium
<i>Leptosphaeria guayuan</i>	medium
<i>Marssonnia euphoriae</i>	medium
<i>Neocapnodium tanakae</i>	medium
<i>Pestalotiopsis pauciseta</i>	medium
<i>Phaeosaccardinula javanica</i>	medium
<i>Phellinus williamsii</i>	medium
<i>Phomopsis guiyuan</i>	medium
<i>Phomopsis longanae</i>	medium
<i>Triposporiopsis spinigera</i>	medium

Plant pests with a high Pest Risk Potential may require specific phytosanitary measures. The choice of appropriate sanitary and phytosanitary measures to mitigate risk is undertaken as part of Risk Management and is not addressed, *per se*, in this document. A table of interception records 1985 - 1998 as downloaded October 29, 1998 is provided in Appendix I.

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D. Preparation, Consultation and Review

This pest risk assessment was prepared by the United States Department of Agriculture (USDA) Animal and Plant health inspection Service (APHIS) Plant Protection and Quarantine (PPQ), Scientific Services Staff.

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Appendix I - Pest Interception Records 1985 - 1998 as of October 29, 1998.

ORIGIN	PEST	WHERE¹	FOR²	TOTAL
ASIA(COUNTRY-?)	APHIDIDAE, SPECIES OF	1	1	1
ASIA (COUNTRY-?)	BACTROCERA SP.	1	1	108
ASIA (COUNTRY-?)	BACTROCERA SP.	3	1	5
ASIA (COUNTRY-?)	BACTROCERA SP.	4	1	1
ASIA (COUNTRY-?)	COCCIDAE, SPECIES OF	1	1	9
ASIA (COUNTRY-?)	CONOGETHES SP.	1	1	2
ASIA (COUNTRY-?)	CRYPTOPHLEBIA SP.	1	1	1
ASIA (COUNTRY-?)	DIASPIDIDAE, SPECIES OF	1	1	2
ASIA (COUNTRY-?)	DIPTERA, SPECIES OF	1	1	9
ASIA (COUNTRY-?)	GELECHIIDAE, SPECIES OF	1	1	8
ASIA (COUNTRY-?)	GELECHIIDAE, SPECIES OF	3	1	2
ASIA (COUNTRY-?)	GRACILLARIIDAE, SPECIES OF	1	1	154
ASIA (COUNTRY-?)	GRACILLARIIDAE, SPECIES OF	3	1	4

ORIGIN	PEST	WHERE¹	FOR²	TOTAL
ASIA (COUNTRY-?)	GRACILLARIIDAE, SPECIES OF	5	3	1
ASIA (COUNTRY-?)	LYCAENIDAE, SPECIES OF	1	1	1
ASIA (COUNTRY-?)	NIPAECCUS SP.	1	1	2
ASIA (COUNTRY-?)	PHLAEOTHRIPIDAE, SPECIES OF	1	1	1
ASIA (COUNTRY-?)	PHLAEOTHRIPIDAE, SPECIES OF	3	1	1
ASIA (COUNTRY-?)	PLANOCOCCUS LILACINUS	7	3	1
ASIA (COUNTRY-?)	PLANOCOCCUS SP.	1	1	1
ASIA (COUNTRY-?)	PSEUDAONIDIA TRILOBITIFORMIS	1	1	1
ASIA (COUNTRY-?)	PSEUDOCOCCIDAE, SPECIES OF	1	1	20
ASIA (COUNTRY-?)	PSEUDOCOCCIDAE, SPECIES OF	2	1	2
ASIA (COUNTRY-?)	PSEUDOCOCCIDAE, SPECIES OF	6	3	2
ASIA (COUNTRY-?)	PYRAUSTINAЕ, SPECIES OF	1	1	5
ASIA (COUNTRY-?)	SCIRTOTHrips SP.	1	1	1
ASIA (COUNTRY-?)	TARSONEMUS SP.	1	1	2
ASIA (COUNTRY-?)	TEPHRITIDAE, SPECIES OF	1	1	93
ASIA (COUNTRY-?)	TEPHRITIDAE, SPECIES OF	5	3	1
ASIA (COUNTRY-?)	THRIPIDAE, SPECIES OF	1	1	1
ASIA (COUNTRY-?)	TISCHERIIDAE, SPECIES OF	1	1	1
AUSTRALIA	PLANOCOCCUS MINOR	1	1	1
AUSTRALIA	TETRANYCHIDAE, SPECIES OF	4	1	1
CAMBODIA	BACTROCERA SP.	1	1	1
CAMBODIA	CONOGETHES SP.	1	1	2
CAMBODIA	DIASPIDIDAE, SPECIES OF	1	1	1
CAMBODIA	DYSMICOCCUS NEOBREVIPES	1	1	2
CAMBODIA	DYSMICOCCUS SP.	1	1	1
CAMBODIA	FIORINIA SP.	1	1	1
CAMBODIA	GRACILLARIIDAE, SPECIES OF	1	1	5
CAMBODIA	ICERYA SEYCHELLARUM	1	1	1
CAMBODIA	OLETHREUTINAЕ, SPECIES OF	1	1	2
CAMBODIA	PLANOCOCCUS LILACINUS	1	1	1
CAMBODIA	PLANOCOCCUS MINOR	1	1	1
CAMBODIA	PLANOCOCCUS SP.	1	1	1
CAMBODIA	PSEUDOCOCCIDAE, SPECIES OF	1	1	6
CAMBODIA	PYRAUSTINAЕ, SPECIES OF	1	1	1
CAMBODIA	TARSONEMUS SP.	1	1	2
CANADA	TEPHRITIDAE, SPECIES OF	1	1	1
CHINA	AULACASPIS SP.	1	2	1
CHINA	BACTROCERA SP.	1	1	1
CHINA	GELECHIIDAE, SPECIES OF	3	1	1
CHINA	GRACILLARIIDAE, SPECIES OF	1	1	5
CHINA	LINDINGASPIS FERRISI	1	2	1
CHINA	PSEUDOCOCCIDAE, SPECIES OF	1	1	2
DOMINICAN REPUB	TORTRICIDAE, SPECIES OF	1	1	1
HAWAII	ALEURODICUS DISPERSUS	1	2	1
HAWAII	BACTROCERA DORSALIS	2	1	1
HAWAII	CRYPTOBLABES GNIDIELLA	2	1	1
HAWAII	PSEUDOCOCCIDAE, SPECIES OF	2	1	1
HONG KONG	BACTROCERA SP.	1	1	2
HONG KONG	CECIDOMYIIDAE, SPECIES OF	1	1	2
HONG KONG	COCCIDAE, SPECIES OF	1	1	1
HONG KONG	GELECHIIDAE, SPECIES OF	1	1	1
HONG KONG	GRACILLARIIDAE, SPECIES OF	1	1	9
HONG KONG	GRACILLARIIDAE, SPECIES OF	4	1	1
HONG KONG	PHLAEOTHRIPIDAE, SPECIES OF	1	1	1
HONG KONG	PSEUDOCOCCIDAE, SPECIES OF	1	1	3
HONG KONG	PYRAUSTINAЕ, SPECIES OF	1	1	1
INDONESIA	COCCIDAE, SPECIES OF	1	1	1
INDONESIA	MACONELLICOCCUS HIRSUTUS	1	1	1

ORIGIN	PEST	WHERE¹	FOR²	TOTAL
INDONESIA	PSEUDOCOCCIDAE, SPECIES OF	1	1	2
ISRAEL	TARSONEMUS SP.	1	2	1
JORDAN	PSEUDOCOCCIDAE, SPECIES OF	1	1	1
KOREA	GRACILLARIIDAE, SPECIES OF	1	1	3
KOREA	PLANOCOCCUS LILACINUS	1	1	1
KOREA	PLANOCOCCUS LILACINUS	7	3	1
KOREA	PLANOCOCCUS MINOR	1	1	1
KOREA	PSEUDOCOCCIDAE, SPECIES OF	1	1	1
KOREA	PYRALIDAE, SPECIES OF	1	1	1
KOREA	TEPHRITIDAE, SPECIES OF	1	1	1
LAOS	GRACILLARIIDAE, SPECIES OF	1	1	1
LAOS	PLANOCOCCUS SP.	1	1	1
MALAYSIA	CONOGETHES SP.	7	3	1
MALAYSIA	GRACILLARIIDAE, SPECIES OF	1	1	1
MALAYSIA	MACONELLICOCCUS HIRSUTUS	1	1	1
MALAYSIA	PLANOCOCCUS SP.	1	1	1
MALAYSIA	PSEUDOCOCCIDAE, SPECIES OF	1	1	2
MALAYSIA	THRIPIDAE, SPECIES OF	1	1	1
PEOPLES REPUBLI	GRACILLARIIDAE, SPECIES OF	1	1	3
PEOPLES REPUBLI	LEPIDOPTERA, SPECIES OF	1	1	1
PEOPLES REPUBLI	PSEUDOCOCCIDAE, SPECIES OF	1	1	2
PHILIPPINES	BACTROCERA SP.	1	1	1
PHILIPPINES	CATAENOCOCCUS HISPIDUS	1	1	3
PHILIPPINES	CATAENOCOCCUS SP.	1	1	1
PHILIPPINES	DYSMICOCCUS NEOBREVIPES	1	1	4
PHILIPPINES	DYSMICOCCUS SP.	1	1	1
PHILIPPINES	GRACILLARIIDAE, SPECIES OF	1	1	12
PHILIPPINES	ICERYA SP.	1	1	1
PHILIPPINES	OLETHRUTINAE, SPECIES OF	1	1	2
PHILIPPINES	PENTATOMOIDEA, SPECIES OF	1	1	1
PHILIPPINES	PHYCITINAE, SPECIES OF	1	1	1
PHILIPPINES	PLANOCOCCUS LILACINUS	1	1	6
PHILIPPINES	PLANOCOCCUS SP.	1	1	1
PHILIPPINES	PSEUDOCOCCIDAE, SPECIES OF	1	1	9
PHILIPPINES	PSEUDOCOCCUS SP.	1	1	1
PHILIPPINES	PYRALIDAE, SPECIES OF	1	1	1
PHILIPPINES	PYRAUSTINAЕ, SPECIES OF	1	1	1
PHILIPPINES	RASTROCOCCUS SP.	1	1	1
REPUBLIC OF CHI(?)	GRACILLARIIDAE, SPECIES OF	3	1	1
REPUBLIC OF CHI	BACTROCERA SP.	1	1	7
REPUBLIC OF CHI	CONOGETHES SP.	1	1	2
REPUBLIC OF CHI	DYSMICOCCUS NEOBREVIPES	1	1	2
REPUBLIC OF CHI	GELECHIIDAE, SPECIES OF	1	1	1
REPUBLIC OF CHI	GRACILLARIIDAE, SPECIES OF	1	1	31
REPUBLIC OF CHI	GRACILLARIIDAE, SPECIES OF	3	1	4
REPUBLIC OF CHI	GRACILLARIIDAE, SPECIES OF	7	3	1
REPUBLIC OF CHI	OLETHRUTINAE, SPECIES OF	1	1	2
REPUBLIC OF CHI	PHYCITINAE, SPECIES OF	1	1	1
REPUBLIC OF CHI	PLANOCOCCUS LILACINUS	1	1	1
REPUBLIC OF CHI	PLANOCOCCUS MINOR	1	1	1
REPUBLIC OF CHI	PLANOCOCCUS SP.	1	1	2
REPUBLIC OF CHI	PSEUDOCOCCIDAE, SPECIES OF	1	1	6
REPUBLIC OF CHI	PSEUDOCOCCIDAE, SPECIES OF	1	3	1
REPUBLIC OF CHI	TEPHRITIDAE, SPECIES OF	1	1	2
REPUBLIC OF CHI	THRIPIDAE, SPECIES OF	1	1	1
SINGAPORE	DIASPIDIDAE, SPECIES OF	1	1	1
SINGAPORE	GRACILLARIIDAE, SPECIES OF	1	1	3
SINGAPORE	GRACILLARIIDAE, SPECIES OF	7	3	1

ORIGIN	PEST	WHERE¹	FOR²	TOTAL
SINGAPORE	PLANOCOCCUS SP.	1	1	2
SINGAPORE	PSEUDOCOCCIDAE, SPECIES OF	1	1	4
SINGAPORE	THRIPIDAE, SPECIES OF	1	1	1
THAILAND(?)	DIPTERA, SPECIES OF	1	1	1
THAILAND	AEOLOTHRIPIDAE, SPECIES OF	1	1	1
THAILAND	ALEUROCANTHUS SP.	1	2	1
THAILAND	BACTROCERA SP.	1	1	6
THAILAND	CATAENOCOCCUS HISPIDUS	1	1	1
THAILAND	CEROPLASTES RUBENS	3	1	1
THAILAND	CONOGETHES SP.	1	1	2
THAILAND	DIPTERA, SPECIES OF	1	1	1
THAILAND	DYSMICOCCUS NEOBREVIPES	1	1	1
THAILAND	GELECHIIDAE, SPECIES OF	1	1	1
THAILAND	GRACILLARIIDAE, SPECIES OF	1	1	28
THAILAND	GRACILLARIIDAE, SPECIES OF	3	1	1
THAILAND	GRACILLARIIDAE, SPECIES OF	4	1	1
THAILAND	GRACILLARIIDAE, SPECIES OF	6	3	1
THAILAND	LEPIDOPTERA, SPECIES OF	1	1	1
THAILAND	LEPIDOPTERA, SPECIES OF	6	3	1
THAILAND	LYCAENIDAE, SPECIES OF	1	1	1
THAILAND	MARGARODIDAE, SPECIES OF	1	1	1
THAILAND	MICROSPAEROPSIS SP.	3	1	1
THAILAND	MYCOSPHAERELLA SP.	3	1	1
THAILAND	OLETHRUTINAE, SPECIES OF	1	1	2
THAILAND	PLANOCOCCUS LILACINUS	1	1	2
THAILAND	PLANOCOCCUS MINOR	1	1	2
THAILAND	PLANOCOCCUS SP.	1	1	1
THAILAND	PSEUDAONIDIA TRILOBITIFORMIS	6	3	1
THAILAND	PSEUDAULACASPI'S SP.	5	3	1
THAILAND	PSEUDOCOCCIDAE, SPECIES OF	1	1	14
THAILAND	PSEUDOCOCCIDAE, SPECIES OF	3	1	2
THAILAND	TEPHRITIDAE, SPECIES OF	1	1	3
THAILAND	THRIPIDAE, SPECIES OF	1	1	2
THAILAND	TORTRICINAE, SPECIES OF	4	1	1
UNITED KINGDOM	MARGARODIDAE, SPECIES OF	1	1	1
UNKNOWN	AEOLOTHRIPIDAE, SPECIES OF	7	3	1
UNKNOWN	BACTROCERA SP.	1	1	3
UNKNOWN	CERATITINI, SPECIES OF	1	1	1
UNKNOWN	DIPTERA, SPECIES OF	1	1	2
UNKNOWN	GRACILLARIIDAE, SPECIES OF	1	1	9
UNKNOWN	GRACILLARIIDAE, SPECIES OF	4	1	1
UNKNOWN	GRACILLARIIDAE, SPECIES OF	5	3	1
UNKNOWN	PSEUDOCOCCIDAE, SPECIES OF	1	1	6
UNKNOWN	PSEUDOCOCCIDAE, SPECIES OF	7	3	2
UNKNOWN	PSEUDOCOCCUS SP.	1	1	3
UNKNOWN	TEPHRITIDAE, SPECIES OF	1	1	7
UNKNOWN	TEPHRITIDAE, SPECIES OF	4	1	1
UNKNOWN	THYSANOFIORINIA NEPHELII	2	1	1
VIETNAM	BACTROCERA SP.	1	1	31
VIETNAM	CARPOSINIDAE, SPECIES OF	1	1	1
VIETNAM	CLADOSPORIUM SP.	4	2	1
VIETNAM	CONOGETHES SP.	1	1	14
VIETNAM	CRYPTOPHLEBIA SP.	1	1	6
VIETNAM	DIASPIDIDAE, SPECIES OF	1	1	1
VIETNAM	DREPANOCOCCUS SP.	1	1	1
VIETNAM	DYSMICOCCUS NEOBREVIPES	1	1	21
VIETNAM	DYSMICOCCUS SP.	1	1	10
VIETNAM	ERIOCoccidae, SPECIES OF	1	1	1

ORIGIN	PEST	WHERE¹	FOR²	TOTAL
VIETNAM	GELECHIIDAE, SPECIES OF	1	1	1
VIETNAM	GRACILLARIIDAE, SPECIES OF	1	1	317
VIETNAM	MACONELLICOCCUS HIRSUTUS	1	1	5
VIETNAM	OECOPHORIDAE, SPECIES OF	1	1	1
VIETNAM	OLETHRUTINAE, SPECIES OF	1	1	41
VIETNAM	ORTHEZIIDAE, SPECIES OF	1	1	1
VIETNAM	PHYCITINAE, SPECIES OF	1	1	2
VIETNAM	PLANOCOCCUS LILACINUS	1	1	5
VIETNAM	PLANOCOCCUS MINOR	1	1	11
VIETNAM	PLANOCOCCUS SP.	1	1	14
VIETNAM	PSEUDAONIDIA TRILOBITIFORMIS	1	1	1
VIETNAM	PSEUDOCOCCIDAE, SPECIES OF	1	1	55
VIETNAM	PSEUDOCOCCUS CRYPTUS	1	1	1
VIETNAM	PSEUDOCOCCUS SP.	1	1	3
VIETNAM	PYRALIDAE, SPECIES OF	1	1	3
VIETNAM	PYRAUSTINAE, SPECIES OF	1	1	2
VIETNAM	SCYTHRIDAE, SPECIES OF	1	1	1
VIETNAM	TARSONEMUS SP.	1	1	2
VIETNAM	TEPHRITIDAE, SPECIES OF	1	1	3
VIETNAM	TINEIDAE, SPECIES OF	1	1	1
VIETNAM	TORTRICIDAE, SPECIES OF	1	1	3
VIETNAM	TORTRICINAE, SPECIES OF	1	1	1
		total		1,350

Where¹= Where intercepted: 1=baggage, 3&4= cargo, 5= Miscellaneous, 6=stores, 7 = quarters

For²= Material for: 1=consumption, 2=propagation, 3=non-entry.

